SIT323/SIT737- Cloud Native Application Development

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10.1P: Monitoring and Visibility

GitHub Link: <https://github.com/AndyWanng/sit323-hd-project.git>

**Deployment Guide for Kubernetes Cluster: Task Calculator Application**

**Introduction**

This Kubernetes configuration encompasses the deployment of a multi-component application which includes a frontend server, an authentication server, a calculator server, and a MongoDB database. This setup ensures that all components are deployed in a secure and scalable fashion within a Kubernetes environment.

**Components Overview**

1. **Secrets:**
   * **mongo-secret:** Stores MongoDB credentials for database access.
2. **Deployments:**
   * **user-service-deployment:** Handles user related services such as authentication
   * **journal-service-deployment:** Handles journal related services such as adding and retrieving,
   * **schedule-service-deployment:** Handles schedule related services such as adding and retrieving,
   * **frontend-service-deployment:** Serves the user interface.
   * **mongo:** MongoDB database deployment for data storage.
3. **Services:**
   * Expose application components within the Kubernetes cluster.
4. **Persistent Volumes:**
   * Ensure data persistence for MongoDB with a PersistentVolumeClaim.
5. **Ingress:**
   * Routes external traffic to the services based on configured paths.

**Deployment Guide**

**Prerequisites:**

* A Kubernetes cluster is up and running.
* kubectl is configured to interact with your cluster.
* Docker images for the application components are available in a registry.

**Deployment Steps:**

1. **Prepare Your Configuration Files:**
   * Ensure all your Kubernetes YAML configurations are stored in one directory. This typically includes your deployments, services, secrets, persistent volume claims, and ingress configurations.
2. **Deploy the Entire Configuration:**
   * Navigate to the directory where your Kubernetes configuration files are located.
   * Use the following command to apply all configurations at once:

*kubectl apply -f .*

1. **Check Deployment Status**:
   * Verify that all pods are running correctly:

*kubectl get pods*

* + Check the status of your services to ensure they are properly set up:

*kubectl get services*

* + Inspect the stateful sets, particularly for MongoDB:

*kubectl get statefulsets*

1. **Monitor Resource Usage and Logs:**
   * Monitor the resource usage:

*kubectl top pod*

* + Tail the logs of a specific pod if needed:

*kubectl logs -f <pod-name>*

1. **Access the Application:**
   * If using an ingress controller, access your application via the URLs configured in the ingress rules.
   * Otherwise, you might need to use port-forwarding or external IPs based on your service configurations to access your application.

Screenshots:

K8s files:

图形用户界面, 文本

描述已自动生成

Pods, services, deployments and statefulsets monitoring:  
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Monitoring the cluster through the dashboard:

Cluster related:

图形用户界面

描述已自动生成 图形用户界面, 应用程序

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Load-balancer related:

图形用户界面, 应用程序

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描述已自动生成

Logging through the dashboard:

Cluster related:  
文本

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Load-balancer related:

图形用户界面, 文本, 应用程序, 电子邮件

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Web pages:

图形用户界面, 网站

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